

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Continuation Patent Application of

T. OKAMOTO et al

Serial No.

Filed: Concurrently Herewith

For: METHOD AND APPARATUS FOR SEARCHING AND DISPLAYING
STRUCTURED DOCUMENT

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

September 28, 2001

Sir:

Before examination on the merits, please amend the above
application as follows.

IN THE CLAIMS

Cancel claims 1-7, 22, 28, and 31 without prejudice or
disclaimer; and rewrite claims 8, 12, 15, 23-27, 29-30, and
32-33 as set forth below.

8. (Amended) A method of searching and displaying a
structured document for an information processing system
including a processor, a memory unit, a file unit and an
input/output unit, said method comprising steps executed by
the processor, said steps comprising:

analyzing a structured document input to said
processor to thereby generate an analyzed structured document,

and storing said analyzed structured document in said file unit;

generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, generating restoring information for restoring said removed element information, and storing said normalized structured document and the restoring information in said file unit;

searching the normalized structured document stored in said file unit in accordance with a query input to said processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet said query, and acquiring information regarding the position of said document meeting said query;

producing a document type definition for highlighted display of the position of said document meeting said query based on the document type definition of the input structured document; and

restoring a structured document having the removed element information based on said restoring information from the normalized structured document acquired by search, and producing a structured document for display with information regarding the position of said document meeting the query and

information for highlighted display added to said restored structured document based on the document type definition for display.

12. (Amended) A method of searching and displaying a structured document according to Claim 8,

wherein the result of search is displayed in highlight using any one of a plurality of highlight display formats for each query term.

15. (Amended) A method of searching and displaying a structured document according to claim 8, further comprising the steps of:

acquiring input subelements to be displayed;

producing a document type definition for subelement display when producing the document type definition for highlighted display; and

producing a structured document for display of the subelements to be displayed when producing the structured document for display.

23. (Amended) A method of search and displaying a structured document for an information processing system including a processor, a memory unit, a file unit and an

108260-5649550

input/output unit, said method comprising steps executed by the processor, said steps comprising:

storing a structured document, as a plain text with a tag, conforming with a specific document type definition input thereto;

searching the plain text stored in said file unit in accordance with an input query to said processor, determining whether or not there is a position meeting said query, acquiring the document having a position meeting said query as a plain text, and acquiring information regarding a position of said document meeting the query; and

producing a structured document for display with information added thereto for highlighted display of the position of said document meeting the query based on said specific document type definition as a document type definition for display;

wherein it is determined whether or not a position meeting a query exists in the attribute information of a tag indicating a document element in the structure document, and

wherein when a position meeting said query exists in the attribute information of a tag, a character string including a character string of said position meeting said query is added to the content of said structured document, and the structured document for display is produced with

information added thereto for highlighted display of said position meeting said query in said character string based on said specific document type definition.

24. (Amended) A method of searching and displaying a structure document for an information processing system including a processor, a memory unit, a file unit and an input/output unit, said method comprising steps executed by the processor, said steps comprising:

storing a structured document, as a plain text with a tag, conforming with a specific document type definition input thereto;

searching the plain text stored in said file unit in accordance with an input query to said processor, determining whether or not there is a position meeting said query, acquiring the document having a position meeting said query as a plain text, and acquiring information regarding a position of said document meeting the query; and

producing a structured document for display with information added thereto for highlighted display of the position of said document meeting the query based on said specific document type definition as a document type definition for display;

25. (Amended) A method of searching and displaying a structure document according to Claim 24,

wherein when said position is so interposed, a character string including a character string of the position meeting said query is added to the content before the specific tag indicating the start of the document element or after the

tag indicating the end of the document element, and the structured document for display is produced with information added thereto for highlighted display of the position meeting said query in said character string based on said specific document type definition.

26. (Amended) A method of search and displaying a structured document according to Claim 24,

wherein in producing the structured document for display with information added for highlighted display based on said document type definition for display, the information for highlighted display is added using a scheme specified in the query.

27. (Amended) An apparatus for searching and displaying a structured document for an information processing system including a processor, a memory unit, a file unit and an input/output unit, comprising:

means for analyzing a structured document input to said processor to thereby generate an analyzed structured document, and storing said analyzed structured document in said file unit;

means for generating a normalized structured document for document search with predetermined no-search

means for producing a structured document for display with information regarding the position of said document meeting the query and information for highlighted

display added to said restored structured document based on the document type definition for display.

29. (Amended) A search and display program for a structured document for an information processing system including a processor, a memory unit, a file unit and an input/output unit, wherein said program comprises:

code means for analyzing a structured document input to said processor to thereby generate an analyzed structured document, and storing said analyzed structured document in said file unit;

code means for generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, generating restoring information for restoring said removed element information, and storing said normalized structured document and the restoring information in said file unit;

code means for searching the normalized structured document stored in said file unit in accordance with a query input to the processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet said query,

and acquiring information regarding the position of said document meeting said query;

code means for producing a document type definition for highlighted display of the position of said document meeting said query based on the document type definition of the input structured document; and

code means for restoring a structured document having the removed element information based on said restoring information from the normalized structured document acquired by search, and producing a structured document for display with information regarding the position of said document meeting the query and information for highlighted display added to said restored structured document based on the document type definition for display.

30. (Amended) A search and display program for a structured document for an information processing system including a processor, a memory unit, a file unit and an input/output unit, wherein said program comprises:

code means for analyzing a structured document input to said processor to thereby generate an analyzed structured document, and storing said analyzed structured document in said file unit;

code means for generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, generating restoring information for restoring said removed element information, and storing said normalized structured document and the restoring information in said file unit;

code means for searching the normalized structured document stored in said file unit in accordance with a query input to the processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet said query, and acquiring information regarding the position of said document meeting said query;

code means for acquiring input subelements to be displayed;

code means for producing a document type definition for highlighted display of the position of said document meeting said query in said subelements to be displayed, based on the document type definition of the input structured document;

code means for producing a document type definition for subelement display when producing the document type definition for highlighted display;

code means for restoring a structured document having the removed element information based on said restoring information from the normalized structured document acquired by search; and

code means for producing a structured document for display of the subelements to be displayed when producing the restored structured document for display.

32. (Amended) A computer-readable storage medium for storing a structured document search and display program implemented by an information processing system including a processor, a memory unit, a file unit and an input/output unit, wherein said program comprises:

code means for analyzing a structured document input to said processor to thereby generate an analyzed structured document, and storing said analyzed structured document in said file unit;

code means for generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, generating restoring information for restoring said removed element information, and storing said normalized structured document and the restoring information in said file unit;

05964475-092804

code means for searching the normalized structured document stored in said file unit in accordance with a query input to the processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet said query, and acquiring information regarding the position of said document meeting said query;

code means for producing a document type definition for highlighted display of the position of said document meeting said query based on the document type definition of the input structured document; and

code means for restoring a structured document having the removed element information based on said restoring information from the normalized structured document acquired by search, and producing a structured document for display with information regarding the position of said document meeting the query and information for highlighted display added to said restored structured document based on the document type definition for display.

33. (Amended) A computer-readable storage medium for storing a structured document search and display program implemented by an information processing system including a

processor, a memory unit, a file unit and an input/output unit, wherein said program comprises:

code means for analyzing a structured document input to said processor to thereby generate an analyzed structured document, and storing said analyzed structured document in said file unit;

code means for generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, generating restoring information for restoring said removed element information, and storing said normalized structured document and the restoring information in said file unit;

code means for searching the normalized structured document stored in said file unit in accordance with a query input to the processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet said query, and acquiring information regarding the position of said document meeting said query;

code means for acquiring input subelements to be displayed;

code means for producing a document type definition for highlighted display of the position of said document

meeting said query in said subelements to be displayed, based on the document type definition of the input structured document;

code means for producing a document type definition for subelement display when producing the document type definition for highlighted display;

code means for restoring a structured document having the removed element information based on said restoring information from the normalized structured document acquired by search; and

code means for producing a structured document for display of the subelements to be displayed when producing the restored structured document for display.

Respectfully submitted,



Daniel J. Stanger
Registration No. 32,846
Attorney for Applicants

MATTINGLY, STANGER & MALUR, P.C.
1800 Diagonal Road, Suite 370
Alexandria, Virginia 22314
(703) 684-1120
Date: September 28, 2001

MARKED-UP VERSION OF REWRITTEN CLAIMS

8. (Amended) A method of searching and displaying a structured document for an information processing system including a processor, a memory unit, a file unit and an input/output unit, [comprising the steps of] said method comprising steps executed by the processor, said steps comprising:

analyzing a structured document input [thereto] to said processor to thereby [to] generate an analyzed structured document, and storing said analyzed structured document in said file unit;

generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, generating [the] restoring information for restoring said removed element information, and storing said normalized structured document and the restoring information in said file unit;

searching the normalized structured document stored in said file unit [according to] in accordance with a query input [thereto] to said processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet

producing a document type definition for highlighted display of the position of said document meeting said query based on the document type definition of the input structured document; and

12. (Amended) A method of searching and displaying a structured document according to Claim [9] 8,

15. (Amended) A method of searching and displaying a structured document [for an information processing system including a processor, a memory unit, a file unit and an

input/output unit, said method comprising steps executed by the processor, said steps] according to claim 8, further comprising the steps of:

[analyzing a structured document input to said processor to thereby generate an analyzed structured document, and storing said analyzed structured document in said file unit;

acquiring content information in each element from said analyzed structured document to thereby generate a document search index and storing said index in said file unit;

searching the document search index stored in said file unit in accordance with a query input to said processor, determining whether or not there is content information meeting said query, acquiring an analyzed structured document having the content information considered to meet said query, and acquiring information regarding the position of said document meeting said query;]

acquiring [an] input subelements to be displayed;

producing a document type definition for

[highlighted] subelement display [of the position meeting said query in said subelement to be displayed, based on] when producing the document type definition [of the input structured document] for highlighted display; and

producing a structured document for [subelement] display of the subelements to be displayed [with information regarding the position of said document meeting the query and information for highlighted display added to a] when producing the structured document for display [based on the document type definition for subelement display].

23. (Amended) A method of search and displaying a structured document [according to Claim 22,] for an information processing system including a processor, a memory unit, a file unit and an input/output unit, said method comprising steps executed by the processor, said steps comprising:

storing a structured document, as a plain text with a tag, conforming with a specific document type definition input thereto;

searching the plain text stored in said file unit in accordance with an input query to said processor, determining whether or not there is a position meeting said query, acquiring the document having a position meeting said query as a plain text, and acquiring information regarding a position of said document meeting the query; and

producing a structured document for display with information added thereto for highlighted display of the

096447-09804

wherein when a position meeting said query exists in the attribute information of a tag, a character string including a character string of said position meeting said query is added to the content of said structured document, and the structured document for display is produced with information added thereto for highlighted display of said position meeting said query in said character string based on said specific document type definition.

storing a structured document, as a plain text with
a tag, conforming with a specific document type definition
input thereto;

searching the plain text stored in said file unit in accordance with an input query to said processor, determining whether or not there is a position meeting said query, acquiring the document having a position meeting said query as a plain text, and acquiring information regarding a position of said document meeting the query; and

producing a structured document for display with information added thereto for highlighted display of the position of said document meeting the query based on said specific document type definition as a document type definition for display;

wherein in searching the structured document stored as a plain text with a tag in said file unit in accordance with an input query, a character string constituting a predetermined specific tag is removed from the character string to be searched, the character strings before and after said character string constituting said specific tag are coupled to each other and searched, and information for highlighted display of said position meeting the query obtained by said search based on said specific document type definition is added to said position meeting the query thereby to produce the structure document for display.

093445.09304

25. (Amended) A method of searching and displaying a structure document according to Claim [22] 24,

wherein in searching the structured document stored in said file unit as a plain text according to an input query, it is determined whether or not a position meeting the query is interposed between a specific tag indicating the start of a predetermined document element and a specific tag indicating the end of said document element, and

wherein when said position is so interposed, a character string including a character string of the position meeting said query is added to the content before the specific tag indicating the start of the document element or after the tag indicating the end of the document element, and the structured document for display is produced with information added thereto for highlighted display of the position meeting said query in said character string based on said specific document type definition.

26. (Amended) A method of search and displaying a structured document according to Claim [22] 24,

wherein in producing the structured document for display with information added for highlighted display based on said document type definition for display, the information

for highlighted display is added using a scheme specified in the query.

27. (Amended) An apparatus for searching and displaying a structured document for an information processing system including a processor, a memory unit, a file unit and an input/output unit, comprising:

means for analyzing a structured document input [thereto] to said processor to thereby generate an analyzed structured document, and storing said analyzed structured document in said file unit;

means for generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, and storing said normalized structured document in said file unit;

means for generating [the] restoring information for restoring said removed element information, and storing said restoring information in said file unit;

means for searching the normalized structured document stored in said file unit in accordance with a query input [thereto] to said processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet

00000-5244550

said query, and acquiring [the] information [on] regarding the position of said document meeting said query;

means for producing a document type definition for highlighted display of the position of said document meeting said query based on the document type definition of the input structured document;

means for restoring a structured document having the removed element information based on said [restoration] restoring information from the normalized structured document acquired by said search; and

means for producing a structured document for display with information [on] regarding the position of said document meeting the query and information for highlighted display added to said restored structured document based on the document type definition for display.

29. (Amended) A search and display program for a structured document for an information processing system including a processor, a memory unit, a file unit and an input/output unit, wherein said [processor] program comprises:

code means for analyzing a structured document input [thereto] to said processor to thereby [to] generate an analyzed structured document, and storing said analyzed structured document in said file unit;

0956443-092804
FOIA b 7 - 5244960

code means for generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, generating [the] restoring information for restoring said removed element information, and storing said normalized structured document and the restoring information in said file unit;

code means for searching the normalized structured document stored in said file unit [according to] in accordance with a query input [thereto] to the processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet said query, and acquiring [the] information [on] regarding the position of said document meeting said query;

code means for producing a document type definition for highlighted display of the position of said document meeting said query based on the document type definition of the input structured document; and

code means for restoring a structured document having the removed element information based on said [restoration] restoring information from the normalized structured document acquired by search, and producing a structured document for display with information [on]

regarding the position of said document meeting the query and information for highlighted display added to said restored structured document based on the document type definition for display.

30. (Amended) A search and display program for a structured document for an information processing system including a processor, a memory unit, a file unit and an input/output unit, wherein said program comprises:

code means for analyzing a structured document input to said processor to thereby generate an analyzed structured document, and storing said analyzed structured document in said file unit;

[code means for acquiring content information in each element from said analyzed structured document thereby to generate a document search index, and storing said generated document search index in said file unit;

code means for searching the document search index stored in said file unit in accordance with a query input to said processor, determining whether or not there is content information meeting said query, acquiring an analyzed structured document having the content information considered to meet said query, and acquiring information regarding the position of said document meeting said query;]

code means for generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, generating restoring information for restoring said removed element information, and storing said normalized structured document and the restoring information in said file unit;

code means for searching the normalized structured document stored in said file unit in accordance with a query input to the processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet said query, and acquiring information regarding the position of said document meeting said query;

code means for acquiring [an] input subelements to be displayed;

code means for producing a document type definition for highlighted display of the position of said document meeting said query in said subelements to be displayed, based on the document type definition of the input structured document;

code means for producing a document type definition for subelement display when producing the document type definition for highlighted display;

code means for restoring a structured document having the removed element information based on said restoring information from the normalized structured document acquired by search; and

code means for producing a structured document for [subelement] display of the subelements to be displayed [with information regarding the position of said document meeting the query and information for highlighted display added to a] when producing the restored structured document [based on the document type definition for subelement] for display.

32. (Amended) A computer-readable storage medium for storing a structured document search and display program implemented by an information processing system including a processor, a memory unit, a file unit and an input/output unit, wherein said program comprises:

code means for analyzing a structured document input [thereto] to said processor to thereby [to] generate an analyzed structured document, and storing said analyzed structured document in said file unit;

code means for generating a normalized structured document for document search with predetermined no-search element information removed from said input structured document, generating [the] restoring information for restoring

said removed element information, and storing said normalized structured document and the restoring information in said file unit;

code means for searching the normalized structured document stored in said file unit [according to] in accordance with a query input [thereto] to the processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet said query, and acquiring [the] information [on] regarding the position of said document meeting said query;

code means for producing a document type definition for highlighted display of the position of said document meeting said query based on the document type definition of the input structured document; and

code means for restoring a structured document having the removed element information based on said [restoration] restoring information from the normalized structured document acquired by search, and producing a structured document for display with information [on] regarding the position of said document meeting the query and information for highlighted display added to said restored structured document based on the document type definition for display.

33. (Amended) A computer-readable storage medium for storing a structured document search and display program implemented by an information processing system including a processor, a memory unit, a file unit and an input/output unit, wherein said program comprises:

code means for analyzing a structured document input to said processor to thereby generate an analyzed structured document, and storing said analyzed structured document in said file unit;

[code means for acquiring content information in each element from said analyzed structured document thereby to generate a document search index, and storing said generated document search index in said file unit;

code means for searching the document search index stored in said file unit in accordance with a query input to said processor, determining whether or not there is content information meeting said query, acquiring an analyzed structured document having the content information considered to meet said query, and acquiring information regarding the position of said document meeting said query;]

code means for generating a normalized structured document for document search with predetermined no-search element information removed from said input structured

document, generating restoring information for restoring said removed element information, and storing said normalized structured document and the restoring information in said file unit;

code means for searching the normalized structured document stored in said file unit in accordance with a query input to the processor, determining whether or not there is a normalized structured document meeting said query, acquiring a normalized structured document considered to meet said query, and acquiring information regarding the position of said document meeting said query;

code means for acquiring [an] input subelements to be displayed;

code means for producing a document type definition for highlighted display of the position of said document meeting said query in said subelements to be displayed, based on the document type definition of the input structured document;

code means for producing a document type definition for subelement display when producing the document type definition for highlighted display;

code means for restoring a structured document having the removed element information based on said restoring

information from the normalized structured document acquired
by search; and

code means for producing a structured document for
[subelement] display of the subelements to be displayed [with
information regarding the position of said document meeting
the query and information for highlighted display added to a]
when producing the restored structured document [based on the
document type definition for subelement] for display.

103369-6449550